

CLAIMS

1. A mirror with no copper layer which comprises:
a glass substrate;
a silver coating layer provided at a surface of the glass substrate;
at least one material selected from the group consisting of Pd, Ni, Eu, Pt, Ru,
5 Na, Zr, Y and Rh, provided at a surface of the silver coating layer which is
adjacent to a paint layer; and
at least one paint layer covering the silver coating layer.
2. The mirror according to claim 1, wherein at least one material selected from
the group consisting of Bi, Cr, Au, In, Ni, Pd, Pt, Rh, Ru, Sn, Ti, V and Zn is
10 provided at the surface of the glass substrate adjacent to the silver layer.
3. The mirror according to claim 2, wherein both Sn and at least one material
selected from the group consisting of Bi, Cr, Au, In, Ni, Pd, Pt, Rh, Ru, Ti, V
and Zn is provided at the surface of the glass substrate adjacent to the silver
layer.
- 15 4. The mirror according to claim 3, wherein both Sn and Pd are provided at the
surface of the glass substrate adjacent to the silver layer.
5. The mirror according to claim 2, wherein Pd is provided at the surface of the
glass substrate adjacent to the silver layer.
- 20 6. The mirror according to any preceding claim, wherein the at least one
material selected from the group consisting of Bi, Cr, Au, In, Ni, Pd, Pt, Rh,
Ru, Sn, Ti, V and Zn is provided as islets at the surface of the glass substrate
adjacent to the silver layer.

7. The mirror according to any preceding claim, wherein Pd is provided at the surface of the silver coating layer which is adjacent to the paint layer overlaying the silver coating layer.
- 5 8. The mirror according to any preceding claim, wherein the at least one material selected from the group consisting of Pd, Ni, Eu, Pt, Ru, Na, Zr, Y and Rh is provided together with at least one material selected from the group consisting of Sn, Cr, V, Ti, Fe, In, Cu and Al at the surface of the silver coating layer which is adjacent to the paint layer overlaying the silver coating layer.
- 10 9. The mirror according to claim 8, wherein Pd is provided together with Sn at the surface of the silver coating layer which is adjacent to the paint layer overlaying the silver coating layer.
10. A mirror with no copper layer, which consists essentially of, in the order recited:
- 15 a substrate in the form of a soda lime glass sheet, having a surface;
palladium and tin provided at said surface of the glass sheet;
a silver coating layer on said surface of the glass sheet, the silver layer having a surface adjacent to the glass sheet and a surface spaced from the glass sheet;
palladium present at the surface of the silver coating layer spaced from the
20 glass sheet; and
at least one paint layer covering the silver coating layer.
11. The mirror according to any preceding claim, wherein traces of silane are present at the surface of the silver coating layer which is adjacent to the paint layer overlaying the silver coating layer.
- 25 12. The mirror according to any preceding claim, wherein the at least one paint layer is substantially lead-free.

13. The mirror according to any preceding claim, wherein the at least one paint layer is lead-free.
14. The mirror according to any preceding claim, wherein the material provided at the surface of the silver coating layer which is adjacent to the paint layer is present in a quantity of less than 0.4 mg/m² of glass.
15. The mirror according to any preceding claim, wherein the at least one material selected from the group consisting of Pd, Ni, Eu, Pt, Ru, Na, Zr, Y and Rh is provided as islets at the surface of the silver coating layer which is adjacent to the paint layer.
16. The mirror according to any preceding claim, wherein the silver coating layer has a thickness of 60 to 110 nm.
17. The mirror according to any preceding claim, wherein the mirror has an average edge corrosion of less than 250 μm when subjected to a 120 hour CASS test.
18. The mirror according to any preceding claim, wherein the mirror has an average edge corrosion of less than 50 μm when subjected to a 480 hour Salt Fog test.
19. A process for manufacturing a mirror with no copper layer which comprises at least the following steps:
providing a glass substrate;
contacting the glass substrate with a silvering solution so as to form a silver coating;
contacting the silver coating formed on the glass substrate with a solution comprising ions of at least one material selected from the group consisting of

Pd, La, Ni, Eu, Zn, Pt, Ru, Na, Zr, Y, Rh and Ce; and
applying at least one paint layer over the silvered substrate.

20. The process according to claim 19 which comprises at least the following steps:

5 providing a glass substrate;
contacting the glass substrate with a solution comprising ions of Sn;
contacting the glass substrate with a solution comprising ions of at least one material selected from the group consisting of Bi, Cr, Au, In, Ni, Pd, Pt, Rh, Ru, Ti, V and Zn;
10 contacting the glass substrate with a silvering solution so as to form a silver coating;
contacting the silver coating formed on the glass substrate with a solution comprising ions of at least one material selected from the group consisting of Pd, La, Ni, Eu, Zn, Pt, Ru, Na, Zr, Y, Rh and Ce; and
15 applying at least one paint layer over the silvered substrate.

21. The process according to any of claims 19 or 20 which consists essentially of the following steps, with optional intervening rinsing or washing steps:
providing a substrate in the form of a glass sheet, having a surface;
contacting the surface of the glass sheet with a solution comprising ions of tin;
20 contacting said surface of the glass sheet with a solution comprising ions of palladium;
contacting said surface of the glass sheet with a silvering solution so as to form a silver coating;
contacting the silver coating formed on the glass sheet with a solution
25 comprising ions of palladium; and
applying at least one paint layer over the silvered glass sheet.

22. The process according to any of claims 19 to 21, wherein the step of contacting the silver coating with at least one material consists essentially of contacting the silver coating with a liquid comprising the material in solution.
23. The process according to claim 21 or 22, wherein said solution used to
5 contact the silver coating formed on the glass sheet is an aqueous solution of palladium chloride which has a concentration of 5 to 130 mg/l.
24. The process according to any of claims 21 to 23, wherein the pH of said solution used to contact the silver coating formed on the glass sheet is from 3 to 5.
- 10 25. The process according to any of claims 21 to 24, wherein the silver coating formed on the glass sheet is contacted with 0.5 to 5 mg PdCl₂ per square metre.